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ABSTRACT:

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(54) CENTRAL HEATING INSTALLATIONS

(71) I, MAURICE VIDALENO, a French citizen, of 80 avenue du Président Wilson, La Plaine Saint-Denis, Seine-Saint-Denis, France, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a central heating installation of the kind operating on the principle of circulating heated fluid through piping and to a process for mounting such a central heating installation.

It is known that, usually, in order to mount such installations, radiators or convectors are placed in the rooms to be heated and then they are connected to a boiler by means of steel or copper piping.

This connection requires the employment of skilled labour. In addition it is difficult to modify an installation once it has been mounted, and there is always a risk that leakages will occur at the many connection points.

The present invention aims to provide a central heating installation which avoids these disadvantages, which is simple to mount and which is constructed from simple materials.

According to one aspect of the invention, a central heating installation operating on the principle of circulating fluid in piping, is characterised in that it includes at least one heat transfer element removably fitted on the piping, the or each heat transfer element comprising a plurality of complementary units, each having a plurality of fins detachably stacked together and disposed substantially perpendicular to the axis of the piping and a seating shaped to conform to the outer surface of the piping, and means to clamp said units together so that said seatings are held in intimate thermal contact with the outer surface of said piping, said clamping means being releasable to permit said units to be removed from said piping.

According to another aspect of the invention, a process for mounting a central heating installation comprises mounting, in

the locations to be heated, piping for circulating heating fluid, and fitting a desired number of heat transfer elements in thermal contact with the piping for completing the installation, the or each heat transfer element comprising a plurality of complementary units, each having a plurality of fins detachably stacked together and disposed substantially perpendicular to the axis of the piping and a seating shaped to conform to the outer surface of the piping, and means to clamp said units together so that said seatings are held in intimate thermal contact with the outer surface of said piping, said clamping means being releasable to permit said units to be removed from said piping.

The invention will now be described, by way of example, with reference to the accompanying drawing, in which

Figure 1 is a perspective view illustrating the mounting of two complementary units of fins on a pipe,

Figure 2 is an end view showing the two units mounted on the pipe,

Figure 3 is a sectional view, on a larger scale, of one embodiment of the heating element,

Figure 4 is a schematic perspective view of a convector for employment in an installation in accordance with the invention, and

Figure 5 is a plan of a portion of a central heating installation in accordance with the invention.

Figures 1 to 3 show part of a heating apparatus formed by fitting on a heating pipe 1, for example a conduit through which hot water flows, a heat transfer element 22 in the form of a pair of complementary units 2 provided with fins 3 disposed perpendicular to the axis of the pipe 1 and having seatings 4 the shape of which are complementary to that of the pipe. This fitting can be effected without either interrupting the pipe or modifying it, the dimensions of the units 2 being such that an intimate thermal contact can be established between them and the pipe, for example by securing them on the latter by means of bolts 5 associated with straps 6 and disposed on both sides of the pipe.

As shown in Figure 3, each fin is pierced 100

by two holes 7 situated on each side of the seating 4 and the various fins of a same unit 2 are connected together by means of screw-threaded rods 8 which pass at the same time through the holes 7 of the fins and through distance-piece washers 8a provided between two consecutive fins in order to maintain them at the desired distance from one another. Nuts 8b screwed on the rods 8 ensure the fixing of the end fins.

The semi-circular indentations of the fins, which form the seating 4 by which the unit 2 is fitted on the pipe, are advantageously provided with a right-angled flange 9 intended to give a greater area of contact between the pipe and the fin. The transmission of heat can also be improved by interposing, before assembly, a paste of good thermally conducting material between the fins 3 and the pipe 1. This paste becomes squeezed and distributed between the flanges 9 and the pipe when the complementary units 2 are fitted on the latter by means of the bolts 5.

If it is desired to increase the heat emitting power of apparatus constituted from a heater element 22 comprising a pair of the complementary units 2, the heating element may be associated with a casing 10, as shown in Figure 4. This casing is open at its lower part and at its upper part so as to ensure the establishment of an ascending current of hot air. Its upper part may be provided with a protective grille 11 and it is possible to provide in the upper part a movable shutter 12 which enables regulation of the flow of the ascending air current produced by the convector formed in this way.

Figure 5 shows with what simplicity it is possible to mount an improved heating installation according to the invention. In the rooms to be heated, for example offices, there is first placed a simple conduit 1, for example on skirting-board along the external walls. The water coming from the boiler (not shown) enters through the end 13 and leaves through the end 14. The installation may be stopped-off provisionally in this state while waiting for the work to be extended, if this is convenient.

Later, an unskilled fitter, even a simple amateur, can fit the desired number of heat transfer elements 22 to the pipe 1, and if necessary the casings 10 which will constitute the convectors.

The invention may be applied to all kinds of central heating installations operating on the principle of circulating fluid through piping. It ensures numerous advantages amongst which may be mentioned:

- simplicity of installation since it involves little more than the laying of a simple pipe;
- decrease of the cost price due, on the one hand, to the economy in the use of

labour and, on the other hand, to the elimination of connection accessories which are required by known radiators and convectors;

- elimination of all risks of leakages;
- the possibility of enlarging or decreasing as desired the heat emission surface in each room, for example due to an error in the original calculation;
- the possibility of carrying out the installation in two stages;
- simplified storage of the material since the apparatus may be constructed by combination of a plurality of basic unitary heating elements.

WHAT I CLAIM IS:—

1. A central heating installation operating on the principle of circulating fluid in piping, is characterised in that it includes at least one heat transfer element removably fitted on the piping, the or each heat transfer element comprising a plurality of complementary units, each having a plurality of fins detachably stacked together and disposed substantially perpendicular to the axis of the piping and a seating shaped to conform to the outer surface of the piping, and means to clamp said units together so that said seatings are held in intimate thermal contact with the outer surface of said piping, said clamping means being releasable to permit said units to be removed from said piping.

2. An installation according to claim 1, in which the or each heat transfer element is constructed from a pair of said complementary units which are capable of being mounted opposite one another and fitted one against the other and against the piping.

3. An installation according to claim 1 or 2, in which a distance-piece is provided between adjacent fins of each complementary unit.

4. An installation according to claim 2 or 3, in which the fins have a flange in the region where they come into contact with the piping to provide said seating for each of said complementary units.

5. An installation according to any of claims 1 to 4, in which a heat-conducting paste is interposed between each complementary unit and the piping.

6. An installation according to any of claims 1 to 5, in which the or each heat transfer element is equipped with a casing transforming it into a convector.

7. A central heating installation constructed and arranged substantially as herein described with reference to the accompanying drawing.

8. A process for mounting a central heating installation comprising mounting, in the locations to be heated, piping for circulating heating fluid, and fitting a desired number of heat transfer elements in thermal

- contact with the piping for completing the installation, the or each heat transfer element comprising a plurality of complementary units, each having a plurality of fins detachably stacked together and disposed substantially perpendicular to the axis of the piping and a seating shaped to conform to the outer surface of the piping, and means to clamp said units together so that said seatings are held in intimate thermal contact with the outer surface of said piping, said clamping means being releasable to permit said units to be removed from said piping.
9. A process according to claim 8, in which the heat transfer elements used are made in the form of basic units, a plurality of said basic units being combinable to form a heat emitting apparatus having the desired heat emitting power capacity.

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